

REMARKS

The above-identified patent application has been amended and Applicants respectfully request the Examiner to reconsider and again examine the claims as amended.

Claims 1 to 41 are pending in the application. Claims 1 to 41 are rejected. Claims 1, 3, 12, 13, 21, 22, 28, 31, 32, and 40 are amended herein. Applicant has amended Claims 12, 21, 28, 31, and 40 herein in an effort to improve the clarity of the claims as will be apparent, and not for reasons of patentability.

The original Examiner in this application, Jonathan D. Schlaifer, has been replaced by Examiner Kyle Stork in connection with the subject application. Applicant's attorney, Kermit Robinson, would like to thank Examiner Stork for the courtesy extended to Applicant's attorney during the telephone interview conducted on July 22, 2005. Rejections of Claims 1, 3, 13, 22, and 32 listed in the Office Action were discussed. In particular, the claimed "clusters of overlapping labels" and the claimed "moving" recited in original Claims 1, 3, 13, 22, and 32 were discussed in view of Madden et al. (U.S. Patent number 6,091,424). Applicant's attorney submitted that Madden et al. teaches neither the claimed "clusters of overlapping labels" nor the claimed "moving." No agreement was reached on this subject. The Examiner expressed a desire to further review Madden et al. in view of the telephone interview. Nevertheless, Applicant has amended Claims 1, 3, 13, 22, and 32 herein, to further amplify the claimed distinction of "moving," in an effort to move the case forward.

As an initial matter with regard to the rejections discussed more fully below, Applicants make note that seven references were used among the various rejections, and that there are eleven different rejections using different combinations of the seven references. Applicants submit that the great number of references and rejections suggests that the Examiner has used impermissible hindsight in his rejections. It has been well established that it is impermissible to

use the inventor's disclosure as a "road map" for selecting and combining prior art disclosures. In re Fritch, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992).

In further support of the above submission, MPEP §2141 states:

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) Reasonable expectation of success is the standard with which obviousness is determined.

Now turning to the specific rejections set forth in the Office Action:

The Rejections under 35 U.S.C. §102(e)

The Examiner rejects Claims 1, 3, and 22 under 35 U.S.C. §102(e) as being anticipated by Madden et al. (U.S. Patent number 6,091,424).

Applicant submits that amended independent Claim 1 is patentably distinct over Madden et al., since the cited reference neither describes nor suggests "...a processor ... operable to calculate initial display coordinates in accordance with an initial position of at least one label in said cluster, to calculate new display coordinates in accordance with a new position of said at least one label in said cluster having less overlap, to display said at least one label at said initial display coordinates, and to move said at least one label on said display from said initial display coordinates to said new display coordinates....," as set forth in amended Claim 1.

With this arrangement, the labels are first displayed on the computer display at initial positions, which may overlap, and the labels are thereafter moved to new positions, which may have less overlap. In contrast, Applicant submits that Madden does not display labels at any initial position. Rather, Madden uses as a starting point for calculation, a set of all label

positions, which is not displayed. Madden merely places labels on a display at their final positions.

Applicant submits that amended independent Claim 1 is further patentably distinct over Madden et al., since the cited reference neither describes nor suggests "...a processor coupled to said display and operable to identify at least a first cluster of overlapping labels on said display...," as set forth in amended Claim 1.

It is well known that the problem of label placement is NP-hard (nondeterministic polynomial time-hard) and that an exhaustive search of optimal label placements can exceed time limits (especially for interactive applications) and/or available computational power, even for a limited number of graphical elements to be labeled and for a limited number of allowable label positions for each graphical element.

The present invention identifies labels on a computer display that lay on top of each other (i.e., at least one "cluster"), therefore restricting the number of labels to be processed, and is operable to move at least one overlapping label in a cluster to avoid the overlap. By reducing the number of repositionable labels to those in the at least one cluster of overlapping labels, calculation workload is reduced.

In contrast, Madden et al. teaches "[a] method for automated placement of labels for a given graph layout or map." (abstract) Like the present invention, Madden et al. attempts to simplify the NP-hard problem of label placements but in a fundamentally different way. Rather than identifying the claimed "cluster," Madden et al. uses as a starting point "the set Q of all potential label placements of graphical features." (see column 7, lines 31-35 and lines 39-43, and also Fig. 15). Madden neither identifies nor limits operation to the claimed clusters of overlapping labels.

Applicant submits that Madden et al. fails to teach the claimed cluster of overlapping labels. A cluster is described in the specification, for example, at page 16, lines 13-15 "... as a

group of aircraft icons that transitively overlap each other, or alternatively as a group of aircraft icons and graphical object icons that overlap each other." Also, at page 17, lines 13-18 "...cluster lists may not include all of the visible aircraft. For example, if an aircraft does not overlap another aircraft or graphical object, and it itself is not overlapped by another aircraft or graphical object, then, in the present embodiment, it will not exist in a cluster and its label position will not be moved. This feature of the present embodiment allows the system to avoid moving labels that are not currently causing any problems, thus minimizing user distraction." Also, at page 10, lines 17-19 it is described that "...it is to be appreciated that the interchangeable use of the terms 'aircraft icon', 'icon' or 'aircraft', can mean a symbol representative of an aircraft and/or its label." Thus, a cluster is a group of graphical objects that overlap on a computer display, which can be icons and/or labels.

In contrast, Madden et al. describes clusters to be two-dimensional polygonal areas in a graph, which are not displayed on a computer display. For example, in describing Figures 6-6c, at column 10, lines 1-10, Madden states:

Given an input graph  $G$ , if the layout of  $G$  is planar (i.e., has no edge crossings), then the faces of that planar graph are the "clusters" of  $G$ . If the layout has crossings, then a planar graph  $G_{clusters}$  is constructed by introducing for each crossing a virtual node. The resulting graph is planar, and the faces of  $G_{clusters}$  are the clusters of  $G$ . FIG. 6(a) shows the layout of an original graph  $G$ . FIG. 6(b) shows a graph  $G_{clusters}$  which has been obtained from  $G$  by introducing virtual nodes, which are denoted by squares. Finally, in FIG. 6(c), the shaded regions are the clusters of  $G$ .

Figures 6a, 6b, and 6c show a constructed graph having Madden's clusters as crosshatched regions. There are seven different clusters in Figure 6c. Thus, clusters as used by Madden are merely regions (areas) on the graph.

Therefore, Applicant submits that the meaning of clusters as used by Madden is significantly different than used in the claimed invention. Madden's clusters are polygonal regions associated solely with objects on a graph, which is not displayed. In contrast, clusters of the present invention are associated with labels and/or icons, in particular labels and/or icons that are actually or transitively overlapping on a graphical display.

Accordingly, Madden et al. fails to teach the claimed processor operable to identify at least a first cluster of overlapping labels on a display.

In view of the above, Applicant submits that Claim 1 is patentably distinct over Madden et al.

For substantially the same reasons discussed above in conjunction with amended Claim 1, Applicant submits that amended independent Claim 3 is patentably distinct over Madden et al., since the cited reference neither describes nor suggests "...means for identifying at least a first cluster of overlapping labels; means for calculating initial display coordinates for at least one label in said cluster; means for calculating new display coordinates for said at least one label in said cluster; and means for moving said label on the display from an initial position in accordance with said initial display coordinates to a new position in accordance with said new display coordinates," as set forth in amended Claim 3.

For substantially the same reasons discussed above in conjunction with amended Claim 1, Applicant submits that amended independent Claim 22 is patentably distinct over Madden et al., since the cited reference neither describes nor suggests "...identifying at least a first cluster of overlapping labels and graphical elements; calculating initial display coordinates for at least one label in said cluster; calculating new display coordinates for said at least one label in said cluster; and moving said label on the display from said initial display coordinates to said new display coordinates," as set forth in amended Claim 22.

In view of the above, Applicant submits that the rejection of Claims 1, 3, and 22 under 35 U.S.C. §102(e) should be removed.

The Rejections under 35 U.S.C. §103(a)

Madden et al. in View of Syeda-Mahmood and Roy

The Examiner rejects Claims 2, 4-5, 8-9, 13-14, 17, 20, 23-24, 27, 32-33, 36, 39, and 41 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Syeda-Mahmood (U.S. Patent number 6,507,838) and Roy (U.S. Patent number 6,295,517).

For substantially the same reasons discussed above in conjunction with amended Claim 1, Applicant submits that amended independent Claim 13 is patentably distinct over Madden et al., whether taken alone or in combination with Syeda-Mahmood and Roy, since the cited references neither describes nor suggest "... means for comparing a plurality of said lists and accumulating cluster lists of overlapping labels and graphical elements, each cluster list representing a respective cluster of overlapping labels...means for calculating initial display coordinates for the labels on a cluster by cluster basis; means for calculating new display coordinates for the labels on a cluster by cluster basis...and means for moving the graphical elements on the display from initial positions according to said initial display coordinates to new positions according to said new display coordinates...," as set forth in amended Claim 13.

For substantially the same reasons discussed above in conjunction with amended Claim 1, Applicant submits that amended independent Claim 32 is patentably distinct over Madden et al., whether taken alone or in combination with Syeda-Mahmood and Roy, since the cited references neither describes nor suggest "... comparing a plurality of said lists and accumulating cluster lists of overlapping labels and graphical elements, each cluster list representing a respective cluster of overlapping labels...calculating initial display coordinates for the labels on a cluster by cluster basis; calculating new display coordinates for the labels on a cluster by cluster basis...and...moving the graphical elements on the display from initial positions according to said initial display coordinates to new positions according to said new display coordinates," as set forth in amended Claim 32.

Madden et al. is discussed above. Applicant submits the Syeda-Mahmood and Roy fail to overcome the deficiencies in Madden et al. Syeda-Mahmood describes a method and system for searching multimedia data, which does not include the claimed clusters of overlapping labels on a computer display, nor the claimed moving of labels. Roy describes a simulation architecture

and method (Abstract), which does not include the claimed clusters of overlapping labels on a computer display, or the claimed moving of labels

Applicant further submits that independent Claims 13 and 32 are patentably distinct over Madden et al., whether taken alone or in combination with Syeda-Mahmood and Roy, since the cited references neither describe nor suggest "... sequentially selecting labels from a plurality of labels on the display...testing each of said selected labels for overlap with other labels and graphical elements in the display...[and] calculating new display coordinates for the labels on a cluster by cluster basis... , " as set forth in independent Claims 13 and 32.

With regard to independent Claim 13 (and using similar rationale with regard to claims 32), the Examiner asserts that Madden et al. discloses an apparatus for positioning labels among graphical elements on a computer display, comprising means for sequentially selecting labels from a plurality of labels on the display. The Examiner recognizes that Madden et al. fails to disclose means for testing each of said selected labels for overlap with other labels and graphical elements in the display; means for accumulating an overlap score for each of said selected labels; means for generating a list of other labels and graphical elements that overlap each of said selected labels; means for comparing a plurality of said lists and accumulating cluster lists of overlapping labels and graphical elements; means for sorting a plurality of said cluster lists according to the number of entries in each; means for calculating new display coordinates for the labels on a cluster by cluster basis; means for comparing on a cluster by cluster basis, the degree of overlap of labels and graphical elements with said new display coordinates and the existing degree of overlap of labels and graphical elements, and if the new coordinates result in a reduction of the degree of overlap; means for moving the graphical elements to new positions according to said calculated display coordinates.

As described above, Madden et al. uses as a starting point "the set Q of all potential label placements of graphical features." (see column 7, lines 31-35 and lines 39-43, and also Fig. 15). With this arrangement, Madden et al. operates on all of the potential label placements simultaneously as a group and evaluates the result with a cost function identified at column 5,

line 64. Madden et al. describes at column 5, lines 60-61 that the problem is to "[f]ind a labeling solution that minimizes the [cost function]... ." Madden et al. does not sequentially test labels for overlap as claimed and does not calculate new display coordinates on a cluster by cluster basis, but instead evaluates the above-mentioned cost function for all labels at the same time.

The Examiner relies upon Syeda-Mahmood to teach the claimed means for testing each of said selected labels for overlap with other labels and graphical elements in the display; means for accumulating an overlap score for each of said selected labels; means for generating a list of other labels and graphical elements that overlap each of said selected labels; and means for comparing a plurality of said lists and accumulating cluster lists of overlapping labels and graphical elements. The Examiner concludes that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Syeda-Mahmood's label-positioning features into Madden... ."

Applicant submits that Syeda-Mahmood fails to overcome the above deficiencies in Madden et al. and also fails to teach the additional claimed features that the Examiner attributes to its teaching. Syeda-Mahmood describes a method and system for searching multimedia data, which does not include the claimed overlapping labels on a computer display. Furthermore, the Examiner refers to column 2, lines 1-17 of Syeda-Mahmood as describing the claimed testing each of said selected labels for overlap with other labels, accumulating an overlap score, generating a list of other labels and graphical elements, and comparing a plurality of said lists and accumulating cluster lists. According to Syeda-Mahmood at column 2, lines 1-17,

A method of searching multi-media data having different modes using a query, the method including processing the multi-media data to extract relevance scores and time reference points of matches to individual media modes, identifying overlapping time periods when two or more of the modal matches correspond to the query, and ranking a relevance of the overlapping time periods. The ranking includes finding an overlapping time period having a highest relevance score, segmenting the overlapping time period to identify beginning and ending events, calculating a relevance distribution based on a frequency of occurrence of the query in a time period, and finding a largest number of different modes of overlap. The modes include two or more of audio, video, text, and graphic display. The query can have an input mode based on any of the modes

and the method further includes outputting results of the query in a mode consistent with the input mode.

Contrary to the Examiner's above assertions, Applicant cannot find the claimed testing each of said selected labels for overlap with other labels, accumulating an overlap score, generating a list of other labels and graphical elements, or comparing a plurality of said lists and accumulating cluster lists in Syeda-Mahmood. In contrast, Syeda-Mahmood describes searching multimedia data for overlapping time periods and assigning a relevance score associated with the time overlap.

The Examiner further relies on Roy to teach how clusters of data may be grouped into a graph, which may be topologically sorted (which would produce a sorting by the number of entries). The Examiner further concludes that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Roy's sorting capability into Madden's invention... ."

Applicant submits that Roy also fails to overcome the above deficiencies in Madden et al. and also fails to teach the additional claimed features that the Examiner attributes to its teaching. Roy describes a simulation architecture and method (Abstract), which does not include the claimed overlapping labels on a computer display. Furthermore, the Examiner relies on column 8, lines 35-48 of Roy as teaching the claimed sorting a plurality of said cluster lists, which states:

As part of Default Clustering 104, once the initial clusters are identified, a topological sort of the cluster graph is performed in order to assign a level number to each cluster. Levelization is accomplished as follows. Clusters with primary inputs are assigned a level of zero. Any other cluster is assigned a level one higher than the maximum level of any cluster driving one of its inputs. For each clock cycle of a clock line, all clusters having that clock line, regardless of whether the cluster is oblivious-triggered cycle-based or event-triggered cycle-based, are evaluated in ascending levelization order. Levelization is performed purely for efficiency purposes. It ensures that a cluster is evaluated only once after all of the inputs which might affect that particular evaluation have changed.

The claimed "cluster," as noted above, is described in the present application, for example, at page 16, lines 13-14 to be "... a group of aircraft icons that transitively overlap each

other, or alternatively as a group of aircraft icons and graphical object icons that overlap each other." Contrary to the Examiner's assertions, Applicant cannot find the claimed sorting a plurality of said cluster lists in Roy. Roy describes a cluster to be "... a region of the circuit which has uniform simulation activity," (abstract) not a group of graphical objects on a computer display as in the present invention.

In view of the above, Applicant submits that Claims 13 and 32 are patentably distinct over the cited references.

Claim 2 depends from and thus includes the limitations of independent Claim 1. Claims 4-5, and 8-9 depend from and thus include the limitations of independent Claim 3. Claims 14, 17, and 20 depend from and thus include the limitations of independent Claim 13. Claims 23-24 and 27 depend from and thus include the limitations of independent Claim 22. Claims 33, 36, 39, and 41 depend from and thus include the limitations of independent Claim 32. Thus, Applicant submits that Claims 2, 4-5, 8-9, 13-14, 17, 20, 23-24, 27, 32-33, 36, 39, and 41 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 1, 3, 13, 22, and 32. Accordingly, Applicant submits that the rejection of Claims 2, 4-5, 8-9, 13-14, 17, 20, 23-24, 27, 32-33, 36, 39, and 41 under 35 U.S.C. §103(a) should be removed.

Madden et al. in View of Syeda-Mahmood, Roy, and Sagawa et al.

The Examiner rejects Claims 6-7 and 25-26 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Syeda-Mahmood, further in view of Roy, and further in view of Sagawa et al. (U.S. Patent number 5,963,731).

Claims 6-7 depend from and thus include the limitations of independent Claim 3. Claims 25 and 26 depend from and thus include the limitations of independent Claim 22. Thus, Applicant submits that Claims 6-7 and 25-26 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 3 and 22.

Accordingly, Applicant submits that the rejection of Claims 6-7 and 25-26 under 35 U.S.C. §103(a) should be removed.

Madden et al. in View of Deering

The Examiner rejects Claims 10 and 29 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Deering (U.S. Patent number 6,525,723).

Claim 10 depends from and thus includes the limitations of independent Claim 3. Claim 29 depends from and thus includes the limitations of independent Claim 22. Thus, Applicant submits that Claims 10 and 29 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 3 and 22. Accordingly, Applicant submits that the rejection of Claims 10 and 29 under 35 U.S.C. §103(a) should be removed.

Madden et al. in View of Prakriya et al.

The Examiner rejects Claims 11 and 30 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Prakriya et al. (U.S. Patent number 6,154,220). As an initial matter, Applicant notes that the U.S. Patent number for Prakriya et al. provided by the Examiner appears to be incorrect, and is correctly indicated above.

Claim 11 depends from and thus includes the limitations of independent Claim 3. Claim 30 depends from and thus includes the limitations of independent Claim 22. Thus, Applicant submits that Claims 11 and 30 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 3 and 22. Accordingly, Applicant submits that the rejection of Claims 11 and 30 under 35 U.S.C. §103(a) should be removed.

Madden et al. in View of Higgins et al.

The Examiner rejects Claims 12 and 31 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Higgins et al. (U.S. Patent number 5,307,455).

Claim 12 depends from and thus includes the limitations of independent Claim 3. Claim 31 depends from and thus includes the limitations of independent Claim 22. Thus, Applicant submits that Claims 12 and 31 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 3 and 22. Accordingly, Applicant submits that the rejection of Claims 12 and 31 under 35 U.S.C. §103(a) should be removed.

Madden et al. in View of Syeda-Mahmood and Roy

The Examiner rejects Claims 15-16 and 34-35 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Syeda-Mahmood and further in view of Roy.

Claims 15-16 depend from and thus include the limitations of independent Claim 13. Claims 34-35 depend from and thus include the limitations of independent Claim 32. Thus, Applicant submits that Claims 15-16 and 34-35 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 13 and 32.

Accordingly, Applicant submits that the rejection of Claims 15-16 and 34-35 under 35 U.S.C. §103(a) should be removed.

Madden et al. in View of Syeda-Mahmood, Roy, and Deering

The Examiner rejects Claims 18 and 37 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Syeda-Mahmood, further in view of Roy, and further in view of Deering.

Claim 18 depends from and thus includes the limitations of independent Claim 13. Claim 37 depends from and thus includes the limitations of independent Claim 32. Thus, Applicant submits that Claims 18 and 37 are patentably distinct over the cited references generally for the reasons discussed above in conjunction with independent Claims 13 and 32. Accordingly,

Applicant submits that the rejection of Claims 18 and 37 under 35 U.S.C. §103(a) should be removed.

Madden et al. in View of Syeda-Mahmood, Roy, and Prakriya et al.

The Examiner rejects Claims 19 and 38 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Syeda-Mahmood, further in view of Roy, and further in view of Prakriya et al.

Claim 19 depends from and thus includes the limitations of Claim 13. Claim 38 depends from and thus includes the limitations of Claim 32. Thus, Applicant submits that Claims 19 and 38 are patentably distinct over the cited references generally for the reasons discussed above in conjunction with independent Claims 13 and 32. Accordingly, Applicant submits that the rejection of Claims 19 and 38 under 35 U.S.C. §103(a) should be removed.

Madden et al. in View of Syeda-Mahmood, Roy, and Higgins et al.

The Examiner rejects Claims 21 and 40 under 35 U.S.C. §103(a) as being unpatentable over Madden et al. in view of Syeda-Mahmood, further in view of Roy, and further in view of Higgins et al.

Claim 21 depends from and thus includes the limitations of independent Claim 13. Claim 40 depends from and thus includes the limitations of independent Claim 32. Thus, Applicant submits that Claims 21 and 40 are patentably distinct over the cited references generally for the reasons discussed above in conjunction with independent Claims 13 and 32. Accordingly, Applicant submits that the rejection of Claims 21 and 40 under 35 U.S.C. §103(a) should be removed.

In View of Madden et al.

The Examiner rejects Claim 28 under 35 U.S.C. §103(a) as being unpatentable over Madden et al.

Claim 28 depends from and thus includes the limitations of independent Claim 22. Thus, Applicant submits that Claims 28 is patentably distinct over the cited reference generally for the reasons discussed above in conjunction with independent Claim 22. Accordingly, Applicant submits that the rejection of Claim 28 under 35 U.S.C. §103(a) should be removed.

Claims 42-46 are new in the application. Support for new Claims 42-46 can be found in steps 74 and 76 of Fig. 5. Claim 42 depends from and thus includes the limitations of Claim 1. Claim 43 depends from and thus includes the limitations of Claim 3. Claim 44 depends from and thus includes the limitations of Claim 13. Claim 45 depends from and thus includes the limitations of Claim 22. Claim 46 depends from and thus includes the limitations of Claim 32. Thus, Applicant submits that Claims 42-46 are allowable over the cited references of record in this case at least for the reasons discussed above in conjunction with Claims 1, 3, 13, 22, and 32. Consideration of new Claims 42-46 is respectfully requested.

In view of the above, Applicant submits that Claims 1-46 and the entire case are in condition for allowance and should be sent to issue and such action is respectfully requested.

The Examiner is respectfully invited to telephone the undersigning attorney if there are any questions regarding this Response or this application.

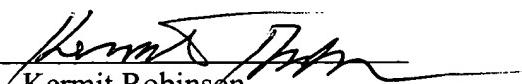
The Assistant Commissioner is hereby authorized to charge payment of any additional fees associated with this communication or credit any overpayment to Deposit Account No. 500845.

Respectfully submitted,

Dated: Aug 10, 2005

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Attachments: none

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